# Developing a Tool Kit for the Assessment of Army Leadership Processes and Outcomes: Verson 1.0

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14. ABSTRACT *(Maximum 200 words)*: This report provides a leadership performance measurement "tool kit", or battery of measures that have been identified as "best practices" for assessing leadership effectiveness, with special attention to effects in the context of organizational change. During an ARI/GMU sponsored workshop, military and civilian leadership researchers identified existing measures, assessment strategies, or measurement templates within a conceptual framework for organization of leadership assessment measures. The framework is organized along three dimensions: leadership processes and outcomes, organizational level, and level of analysis. Several measures were recommended and reviewed for inclusion based on several criteria (e.g., user-friendly, broad in scope, military face validity, documented research record with sound psychometric evidence). The resulting 15 assessment measures or templates with descriptions, summary of psychometric evaluations, application and source information, as well as references and suggested reading list are included. While measures were identified for each cell of the framework, leadership processes for lower, middle, and upper level leaders, targeting individual, dyad, and team levels of influence were strongly supported. Unit leadership at the upper level processes, however, received less                     (continued)

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assessment support. Further, the outcome measures lacked "hard" behavioral measures. Recommendations for further research on assessment tools regarding these and organizational levels of analysis were suggested. Template measures, such as the observer/controller ratings, mission accomplishment, and readiness indices also require further research. Researchers using the measures in this tool kit are asked to facilitate continued development of the measures and the tool kit. This tool kit provides a basis for Army leadership research, further work is needed to expand and validate the leadership assessment measures.

# FOREWORD

The Army must develop leaders who can effectively apply the four core dimensions of leadership: values, attributes, skills, and actions. These provide the basis for leader development policy, doctrine, training, and research. To assist the Deputy Chief of Staff for Personnel (DCSPER) as the proponent for leadership and leader development policy, the US Army Research Institute (ARI) and George Mason University (GMU) sponsored a workshop of military and civilian leadership researchers on November 12, 1998.

This report summarizes the findings of the Leadership Tool Kit meeting. This was a US Army Research Institute (ARI) and George Mason University (GMU) sponsored workshop of military and civilian leadership researchers. This group identified existing measures, assessment strategies, or measurement templates within a general conceptual framework. The framework was organized along three dimensions: leadership processes and outcomes, organizational level, and level of analysis. Several measures were recommended and reviewed for inclusion base on criteria such as: user – friendliness, breadth of scope, face validity, existence of a documented research record, and soundness of psychometric evidence. The resulting battery of measures was then analyzed for how well they fulfilled all elements of the framework, and recommendations were made.

The report provides an overview of 15 leadership assessment measures or templates, with descriptions, summary of psychometric evaluations, application and source information, and references and suggested reading list. While measures were identified for each cell of the conceptual framework, unit leadership at the upper level was not well assessed, and many outcome instruments lacked "hard" behavioral measures. Researchers using the measures in this tool kit are asked to facilitate their further development. This research was briefed to the Leadership Action Group, chaired by BG Melton, Director, Human Resources Directorate, DCSPER.

It is hoped that this leadership assessment tool kit will help all organizations to improve current leadership research, develop new ideas about leadership, build consensus, and help improve the development of effective Army leaders.

Developing a Tool Kit for the Assessment of Army Leadership Processes and Outcomes: Version 1

## EXECUTIVE SUMMARY

Research Requirement:

(a) To assist the Deputy Chief of Staff for Personnel (DCSPER) as the proponent for leadership and leader development policy by establishing a list of a battery of measures that have been identified as "best practices" for assessing leadership effectiveness.

Procedures:

This report summarizes the result of a US Army Research Institute (ARI) and George Mason University (GMU) sponsored workshop of military and civilian leadership researchers. This group identified existing measures, assessment strategies, or measurement templates within a general conceptual framework. The framework was organized along three dimensions: leadership processes and outcomes, organizational level, and level of analysis. Several measures were recommended and reviewed for inclusion base on criteria such as: user – friendliness, breadth of scope, face validity, existence of a documented research record, and soundness of psychometric evidence. The resulting battery of measures was then analyzed for how well they fulfilled all elements of the framework, and recommendations were made.

Findings:

The report provides an overview of 15 leadership assessment measures or templates, with descriptions, summary of psychometric evaluations, application and source information, and references and suggested reading list. While measures were identified for each cell of the conceptual framework, unit leadership at the upper level was not well assessed, and many outcome instruments lacked "hard" behavioral measures. Researchers using the measures in this tool kit are asked to facilitate their further development. It is hoped that the structure of this leadership assessment tool kit will assist all organizations in improving current leadership research, develop new ideas about leadership, build consensus, and help improve the development of effective Army leaders.

Utilization of Findings:

This research was briefed to the Leadership Action Group, chaired by BG Melton, Director, Human Resources Directorate, DCSPER.

# DEVELOPING A TOOL KIT FOR THE ASSESSMENT OF ARMY LEADERSHIP PROCESSES AND OUTCOMES: VERSION 1.0

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## Background

The U.S. Army has had a long-standing interest in leadership, in particular, the *assessment* of leadership constructs. This interest has resulted in a proliferation of leadership measures and assessment tools. Recently, Mathieu, Klimoski, Rouse, and Marsh (1997) completed a review of leadership assessment research sponsored by the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) between 1987 and 1997. The goals of this review were to (a) identify and describe major themes and initiatives by ARI leadership labs; (b) critically analyze specified instruments; (c) compare ARI assessment tools against external benchmarks; and (d) propose recommendations for future leadership research by ARI.

Mathieu, et al, (1997) made a number of observations, conclusions and recommendations from their review. Some of their major points were:

- Because most theoretical bases for leader assessment research conducted at ARI emphasized the change in leader performance requirements across careers and organizational hierarchies (e.g., Stratified Systems Theory), measures of leader knowledge and characteristics needed to be developed with consideration given to contextual variables;

- In several circumstances, commercially available measures of leader personality variables are preferable to measures developed internally at ARI;

- Several measures of leader knowledge and expertise developed through ARI sponsorship were promising;

- A multi-source (i.e., 360 degree) rating format should be considered for the assessment of leadership behavior;

- Working with a research protocol had advantages. Specifically, the following research protocol was recommended for research directed toward the development of appropriate standardizable leadership assessment tools: (1) adopt a theory or conceptual framework that describes the antecedents of leader effectiveness; (2) Complete an updated analysis of the requirements of Army leadership positions to identify both common and unique dimensions; (3) Identify and analyze the knowledge, skills, abilities, and other attributes important for accomplishing leader performance dimensions; (4) Develop effective criteria measures of effective leadership; (5) Use more confirmatory (and less exploratory) methods for evaluating instrument dimensionality; and (6) Incorporate additional explanatory variables to identify limits to generalizability and potential moderator relationships;

- Give greater consideration to contextual variables (e.g., technology, follower

characteristics, changes in operational environments) that are likely to change in the 21st century, particularly to the influences of these changes on Army leadership and leader assessment;

- There is a serious need for the development of leadership measures that accurately appraise the effects and influences of leadership on performance.

The last point is perhaps the most critical of the issues raised by Mathieu et al. (1997). Continuing research efforts to understand Army leadership and leader development need to be grounded in a useable set of criterion measures that most researchers agree have conceptual fidelity and acceptable psychometric properties. For example, without valid and useful criterion measures, successful research cannot be conducted to develop and validate the meaningfulness of assessments of leader values, knowledge, skills, personality variables, capabilities, and other personal attributes. Likewise, on a more practical note, leader effectiveness measures are also necessary to validate conceptual specifications of leader selection requirements.

If measures of leadership effectiveness are indeed inadequate, then research efforts need to be devoted to the development of better and more appropriate assessment tools or procedures. Such efforts could yield toolkits that can serve as markers of "real world" effectiveness (e.g., military combat effectiveness). Accordingly, the initial tasks in a broad and comprehensive research program on Army leadership are to (a) identify those measures that can be considered "best practices" for the assessment of leadership effectiveness; and (b) develop and validate new measures of leadership effectiveness that are not adequately represented among these practices.

**Leader Effectiveness Workshop**

To examine current and potential measures of leadership effectiveness, ARI sponsored a conference of military and civilian leadership researchers. These participants were asked to organize the domain of leader effectiveness and to identify suitable existing measures, assessment strategies, or measurement templates. The "criterion space" for leader effectiveness to be included would involve tools that would get at both leadership processes (e.g., "planning", "communicating", "motivating"), and outcomes of such processes (e.g. "subordinate motivation and commitment", "unit performance"). The proceedings of this workshop are summarized in Appendix A.

The intended major product of this workshop was a leader assessment tool kit. This is a set of measures (or tools) or measurement approaches that represent appropriate ways to assess leader effectiveness. Such a tool kit could be expected to become part of a standardized protocol to be used in leadership research endeavors across the Army. Standard users of such a kit would promote the development of a more comprehensive data and knowledge base regarding Army leadership than currently exists. A standard measurement protocol would also facilitate the applicability of research findings across Army domains, as well as the identification of factors that restrict such applicability.

The present report summarizes the organization and the contents of the leadership

assessment toolkit. The conceptual framework that guided the organization of the toolkit is presented in the next section of this report. Then, the specific measures that comprise the toolkit are listed, followed by some general conclusions.

**Conceptual Framework for the Proposed Leadership Assessment Tool Kit**

Figure 1 presents the conceptual framework proposed for the organization of a leadership assessment took kit and presented to conference participants. This framework is organized along three dimensions: leadership processes and outcomes, organizational level, and level of analysis.

| Measures of Leader Effectiveness | | | | | | |
|---|---|---|---|---|---|---|
| | Process Measures | | | Outcome Measures | | |
| Organizational Level: | Lower | Middle | Upper | Lower | Middle | Upper |
| L e v e l  o f  A n a l y s i s — Individual | | | | | | |
| Dyad | | | | | | |
| Team | | | | | | |
| Unit | | | | | | |

Figure 1. Conceptual framework for organization of leadership assessment measures.

**Leadership processes.** The dimensions of leader processes versus outcomes emphasizes that the criterion space for leader effectiveness can be divided into (a) specific actions (e.g., interpersonal processes, personnel management) and mental processes (e.g., decision making, planning, and strategy making) that constitute the practice of leadership, i.e., leadership processes, and (b) the consequences of those actions and mental processes, i.e., leadership

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outcomes. In thinking about leadership in terms of an input-process-outcome (IPO) framework, leadership *process* measures might then serve as criteria for the influence of leader attributes and the leader's interpretations of role performance requirements. In many conceptual models of leadership, such processes are considered mediators of the influence of leader attributes and performance requirements on performance outcomes (see Bass, 1990, Yukl, 1994, and Zaccaro, 1996, for reviews of such models). Accordingly, measures of leadership processes are important for validating instruments developed to assess leader attributes.

**Leadership outcomes.** Leadership *outcomes* are defined as the consequences of leadership actions and mental processes. Such outcomes can be specified both in terms of changes in psychological states as a result of leadership influences (e.g., changes in the leader's or subordinates' cognition, knowledge, attitudes, and motivation; also developmental growth), and tangible performance (i.e., action-oriented) results (e.g., quantity, quality, mission accomplishment). Conceivably, some outcomes such as changes in leader and subordinate knowledge, skills, attitudes and motivation can be construed as antecedents of other outcomes (e.g., unit mission accomplishment). However, for the sake of parsimony, this level of conceptual specification was not adopted for the proposed tool kit. It should be acknowledged at the outset that while outcomes may be closely coupled to leader behaviors, in complex organizations they may be the consequence of processes or choices by the leader made much earlier or even at different places (e.g., a decision to organize a unit a particular way).

**Organizational level.** The nature of effective leader processes and outcomes were considered to vary by organizational level. For purposes of discussion, we specified three levels, lower, middle, and upper organizational leadership. This stratification corresponds to most models of organizational leadership (e.g., Hunt, 1991; Jacobs & Jaques, 1987, 1990, 1991; Zaccaro, 1996). The working assumption is that the leadership processes necessary for the successful accomplishment of work requirements vary across organizational levels. Likewise, the outcomes reflective of effective junior leadership are different respectively from those of effective middle or senior leadership. Accordingly, assessments tools used to measure leadership processes and outcomes need to vary in content depending upon the targeted level of organizational leadership of interest.

**Level of analysis/Target of influence.** The final dimension in the conceptual framework proposed for the leader assessment tool kit organized potential measures according to different levels of analysis in terms of targeted influence. Four such levels were specified: individual, dyad, team, and unit. Individual-level measures would include those instruments that assess intraindividual processes (e.g., cognitive activities of environmental scanning, information organization, as well as behaviors in support of boundary spanning or strategic planning) and outcomes (e.g., the leader's developmental and professional growth, the quality of his or her strategic plans). Dyadic-level measures focus on leader subordinate exchange processes (e.g., communication, developing subordinate skills) and the products of such processes (e.g., subordinate motivation, subordinate performance quality). Team-level instruments reflect team leadership processes (e.g., norm formation and enforcement, team decision-making) and team outcomes (e.g., team cohesion, team mission accomplishment). Unit-level measures target the leader's influence over large scale organizational units. Such measures may focus on unit-level

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processes (e.g., development of organizational strategy or vision, distribution of information and plans, changes in organizational structure and policy), and unit outcomes (e.g., work flow, readiness status, organizational mission accomplishment).

## Summary of Tool Kit Contents

The authors of this report reviewed the recommendations of the small groups at the toolkit workshop and the evaluation report produced by Mathieu et al. (1997). From these and other sources of information about leadership and leader assessment (e.g., Bass, 1990, 1996; Yukl, 1994, Zaccaro, 1996), they compiled a set of proposed measures for inclusion in a leader assessment toolkit. These measures are listed in this section of the report. They are organized by the three dimensions of the conceptual framework (i.e., process versus outcome, organizational level, and level of analysis or targeted influence). Appendix B contains a description of each measure, summaries regarding its psychometric evaluations, comments regarding application of the measure, sources to obtain the measure, and references and suggested readings for the measure.

In brief, however, the following measures and tools are being offered as entries:

**Leadership Processes**

**Lower level leaders: Individual level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Leader Azimuth Check

- Observer/Controller ratings - template required

**Lower level leaders: Dyad level of analysis**

- LMX-7

- Managerial Practices Survey

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

- subordinate ratings from 360 degree assessment protocols (e.g., Leader

Azimuth Check)

**Lower level leaders:  Team level of analysis**

- Team-LMX

- Managerial Practices Survey

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Lower-level leadership:  Unit level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Leadership Processes**

**Middle level leaders:  Individual level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Leader Azimuth Check

- Observer/Controller ratings - template required

**Middle level leaders:  Dyad level of analysis**

- Managerial Practices Survey

- Multifactor Leadership Questionnaire

- LMX-7

- Competing Values Inventory

- Observer/Controller ratings - template required

- subordinate ratings from 360 degree assessment protocols (e.g., Leader Azimuth Check)

**Middle level leaders: Team level of analysis**

- Team-LMX

- Managerial Practices Survey

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Middle level leaders: Unit level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Leadership Processes**

**Upper level leaders: Individual level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Upper level leaders: Dyad level of analysis**

- Multifactor Leadership Questionnaire

- LMX-7

- Competing Values Inventory

- Observer/Controller ratings - template required

- subordinate ratings from 360 degree assessment protocols (e.g., Leader Azimuth Check)

**Upper level leaders:  Team level of analysis**

- Team-LMX

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

**Upper level leaders:  Unit level of analysis**

- Multifactor Leadership Questionnaire

- Competing Values Inventory

- Observer/Controller ratings - template required

## Leadership Outcomes

**Lower level leaders:  Individual level of analysis**

- Benchmarks

- Observer/Controller ratings - template required

- TKML

**Lower level leaders:  Dyad level of analysis**

- LMX-7

- Empowering Behavior Questionnaire

- Observer/Controller ratings - template required

- Three-Component Model of Organizational Commitment

- Job Descriptive Index

**Lower level leaders:  Team level of analysis**

- Team Effectiveness Profile

- Observer/Controller ratings

- WRAIR instrument

- mission accomplishment indices - template required

- readiness indices - template required

### Lower level leaders:  Unit level of analysis

- Observer/Controller ratings

- WRAIR instrument

- mission accomplishment indices - template required

- readiness indices - template required

## Leadership Outcomes

### Middle Level leaders:  Individual level of analysis

- Observer/Controller ratings - template required

- Benchmarks

### Middle Level leaders:  Dyad level of analysis

- LMX-7

- Empowering Behavior Questionnaire

- Observer/Controller ratings - template required

- Three-Component Model of Organizational Commitment

- Job Descriptive Index

### Middle Level leaders:  Team level of analysis

- Team Effectiveness Profile

- Observer/Controller ratings - template required

- WRAIR instrument

- mission accomplishment indices - template required

- readiness indices - template required

**Middle Level leaders:  Unit level of analysis**

- Observer/Controller ratings - template required

- WRAIR instrument

- mission accomplishment indices - template required

- readiness indices - template required

## Leadership Outcomes

**Upper Level leaders:  Individual level of analysis**

- Observer/Controller ratings - template required

- Benchmarks

**Upper Level leaders:  Dyad level of analysis**

- LMX-7

- Empowering Behavior Questionnaire

- Observer/Controller ratings - template required

- Three-Component Model of Organizational Commitment

- Job Descriptive Index

**Upper Level leaders:  Team level of analysis**

- Team Effectiveness Profile

- Observer/Controller ratings

- WRAIR instrument

- mission accomplishment indices - template required
- readiness indices - template required
- ARI command climate index

**Upper Level leaders:  Unit level of analysis**

- Observer/Controller ratings - template required
- WRAIR instrument
- mission accomplishment indices - template required
- readiness indices - template required
- ARI command climate index

## General Conclusions

This report presents a proposed toolkit for the assessment of leader effectiveness in the Army.  There are several observations to be made about this toolkit.  First, the toolkit is organized around three dimensions, or questions that presumably determine whether a particular measure is appropriate for a particular research application.  These questions are

- Are the leadership effectiveness criteria of interest, process variables, outcome variables, or both?

- What level of organizational leadership is being investigated?

- What is the locus or target of leader influence?

Other questions would also dictate the utility of any particular measure.  However, we believe that the above questions are the most critical in the design of an assessment battery in any leadership research study.  Also, these questions are the most general in that they would apply across most leadership research settings.

The cells in the matrix corresponding to measures of leadership processes displayed by lower, middle, and upper level leaders, targeting individual, dyad, and team levels of influence are the most robust in terms of representation.  Measures such as the MLQ and the MPS have extensive research histories with well-established psychometric credentials.  Further, while observer/controller ratings are necessarily context-specific, templates of such ratings for many military settings already exist and can be adapted readily by future leadership researchers.  Two issues that remain about the measures proposed in these cells is that (a) as a set, they require

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additional research to verify their content validity, and (b) some of the measures (e.g., Leader Azimuth Check) still require additional psychometric investigations before their widespread use can be fully endorsed.

At this point, it should be noted that some tools and instruments do appear to have general applicability. For example, the MLQ is suitable for individuals, dyads, and teams, as well as for many levels of leadership in the Army -- lower, middle, and upper. Such generalization can promote an examination of key research findings across different Army contexts. However, because models of leader effectiveness are likely to change qualitatively according to the dimensions of the toolkit matrix, we would urge more research on assessment tools and instruments that are specific to particular organizational levels and targets of leader influence.

Also noteworthy is that we discovered that when the level of analysis is *unit* leadership, particularly when *senior* leadership processes are the focus of research, there are few suitable candidates. In fact, the ones selected for this toolkit are the same as those for leaders at other levels of analysis and of the organization. But these measures include only some of the processes known to be engaged in by senior leaders, and they miss those processes that are unique to Army executives. The use of observer/controller ratings is primarily speculative, because few examples of such ratings at the large unit level exist in military executive leadership research. Thus, future research efforts need to be devoted to the development of measures that assess leadership processes at the unit level, particularly by senior leaders.

The toolkit contains a conspicuous lack of "hard" or behavioral outcome measures. Most of the suggested assessment tools reflect attitudes (e.g., JDI), motivation (e.g., Three-Component Model of Organizational Commitment), or changes in attributes as a result of leadership training or work experience (e.g., Benchmarks). The OC ratings and indices reflecting mission accomplishment and unit readiness are the only suggested performance outcome measures suggested in the toolkit, and these are offered only in the form of assessment templates. Further, the proposed outcome measures do not differ by organizational level despite considerable research showing that the nature of leadership and leader performance requirements changes qualitatively across the organizational hierarchy. Thus, this part of the toolkit requires a substantial investment in research to identify and validate appropriate level-specific measures of "objective" or "hard" leader performance outcomes.

The notion of a "template" being offered in various cells of the matrix, in lieu of any actual measures, deserves some comment. In particular, we have suggested that observer/ controller ratings, mission accomplishment, and readiness indices be used as measures of leader effectiveness. Because these measures are so context-specific, is impossible to provide a single tool that is applicable across all leader performance domains. However, several basic dimensions can be identified that are general characteristics of effective leader performance. The measurement of these characteristics should be the core of an assessment template. Two examples, shown in Appendix C, are the observer/controller rating forms developed by Bass, Avolio, and their colleagues to assess (a) platoon leader performance, and (b) performance at the National Training Center (NTC), respectively. Each form assesses basic leadership cognitive

and interpersonal processes. The platoon performance form also assesses overall platoon effectiveness. However, each form contained exemplars of leadership that were specific to the training contexts being examined. The forms also differed in that overall effectiveness was not assessed on the NTC form, while the platoon performance form did not contain Army leadership doctrine. We urge that research be conducted to identify critical features that should be included such OC rating forms -- the use of such forms is widespread within the Army and they can be effective measures of leadership processes and outcomes. However, research should be directed at their standardization (as much as is possible, given different training context) and validation. Further, similar templates need to be developed for indices of mission accomplishment and unit readiness.

**Next Steps**

What are some potential next steps in the development and use of this toolkit? First, the measures offered in this toolkit will initially need to be used with caution. Researchers who begin to use particular measures on a regular basis should establish local norms and data for subsequent interpretation and application. These data should also contribute evidence for the continued psychometric viability of the measure. To facilitate the continued development of toolkit measures, investigators are urged to provide feedback to ARI on their use of measures. A feedback form located at Appendix D is presented for this purpose. Second, the toolkit should be reviewed periodically, and updated to reflect the latest psychometric findings and research activities.

Third, we urge that researchers who use this measures work together to establish a centralized database of leadership measures. Such a database can contribute to integrated studies across different Army leadership research units, as well as more longitudinal and career-long studies. For example, common measures (e.g., the MLQ, MPS, and OC ratings) that are administered to West Point and ROTC cadets, officers participating in the Officer Basic and Advanced course, and at other similar points in an officer's career can provide a powerful data set that lead to a better understanding of issues related to leader performance and leader development. As an organization, the U.S. Army is perhaps uniquely positioned and qualified to provide such a database. This and similar kinds of databases can greatly enhance our understanding of organizational leadership.

A fourth potential next step is to develop better measures to fill in various holes in the toolkit matrix. Related to this recommendation is the development of templates for OC ratings, mission accomplishment measures, and readiness indices. As we noted, the matrix does not offer many assessment tools that are specific to particular levels of Army leadership. However, a large body of research has established that different leadership processes and outcomes characterize upper, middle, and lower level leaders (Zaccaro, 1996). This degree of differentiation should be reflected more accurately in the toolkit.

As we pointed out in the introduction, one desirable assessment feature is the ability to track growth and learning outcomes, especially those related to self-development and distance learning efforts. As the Army is transforming itself into a learning organization with increased

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digitization and use of the internet, leader development activities and experiences need to be integrated into the leader assessment and self-assessment process. One key to making this connection is the assessment of leaders' knowledge. As Mathieu et al. (1997) indicate, leader knowledge assessment, using tacit knowledge instruments such as the TKML show considerable promise. These assessments require a substantial development effort because of their specificity, and the subtle nuances of the test require validation against the consensus of experts or large pools of leaders. Although this has been done successfully for lower and middle leaders, it remains to be carried out for upper level leaders, particularly on strategic leadership issues.

Finally, the report by Mathieu et al. (1997) that evaluated leader assessment research sponsored by ARI argued that commercially-available measures may be preferable to those developed internally at ARI. Similarly, we would suggest a moratorium on the development of additional "home grown" measures. While these measures have the advantage of being more context-sensitive, they require much more psychometric investigation that most researchers can afford to complete in the typical time-pressured environment characterizing most Army leadership research endeavors. Most commercially available measures have already developed substantial psychometric evidence for their reliability and validity. Further, these measures can often be readily adapted to military situations without appreciable loss of quality. One example of such application is the MLQ, offered as a candidate tool in all of the leadership process cells in the toolkit matrix. While this measure has been used in many civilian organizations, it has also been successfully adapted for use in Army platoons, companies and battalions. Its psychometric properties have been investigated extensively.

**Summary**

This report offers a toolkit of leadership measures that we believe is suitable for research on leadership in the Army. While there remains a substantial amount of work that needs to be completed to expand and validate parts of this toolkit (i.e., to add more and better tools), the measures included here can provide the basis for a powerful research database on Army Leadership. Such information source can be invaluable to Army policy makers as they make decisions about leadership and leadership development in the 21st century.

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# APPENDIX A

## Proceedings of the Leadership Assessment Toolkit Workshop

The toolkit presented in this emerged in part from a workshop sponsored by the U.S. Army Research Institute for the Behavioral and Social Sciences and George Mason University. Participants in this workshop included: active duty Army officers, leadership researchers from multiple Army domains (e.g., Army Research Institute, Center for Army Leadership, U.S. Military Academy), leadership researchers from multiple academic settings, leadership consultants and practitioners, and Army personnel responsible for the education and development of junior army officers. A listing of all participants is given in Appendix E. This appendix to the report describes the proceedings of this workshop.

### Pre-workshop Activities

Prior to arriving at the workshop, participants were asked to review materials outlining the nature of the tasks to be accomplished when they arrived and an organizing scheme of the expected work product from their efforts. They were also asked to do some preparation for the session (see Appendix F). Specifically, with regard to the latter, they were asked to nominate candidate measures for inclusion in the toolkit. They were asked to categorize their nominations, according to their appropriateness or applicability to certain levels of organizational leadership, targets of leader influence, and whether the candidate measure assessed leadership processes, outcomes, or both. In making nominations, participants were advised that:

- a given measure could be nominated for more than one cell;

- more than one measure could be nominated for each cell;

- some cells were likely to remain empty despite the efforts of participants;

- candidate measures may be derived from basic or applied research;

- candidate measures may come from either (or both) military and civilian leadership research.

Participants were asked to cite relevant sources and references for each candidate measure. They were also asked to bring to the conference a specimen copy of each proposed measure. Appendix F contains the background information and assignment instructions mailed to each of the participants.

The three dimensions of organizational level, target of influence, and processes versus outcomes were offered to workshop participants as the primary means of thinking about and classifying potential candidates for the proposed leader assessment toolkit. But, other considerations or factors were also entertained for such a classification. These include (a) the presumed purpose or "use" of the measure (e.g., to measure effectiveness in training or for

administrative actions, like promotion decisions); (b) the setting or venue for the use of a proposed measure (e.g., Army garrison context, war games/simulation; (c) targeted sample (e.g., military versus Army civilian leaders); and source of effectiveness data (e.g., peers, supervisors, subordinates, self, observers, archival records). While important, these factors were treated as secondary to the three major aforementioned dimensions. Nonetheless, workshop participants were also asked to consider these factors in their deliberations of various measures and of the utility of the proposed toolkit.

**Workshop Proceedings**

Workshop participants were asked to complete the following tasks at the event itself:

- Describe current Army practices in the assessment of leadership processes and outcomes;

- Consider the implications and usefulness of a heuristic framework for organizing existing tools, techniques, and measures for assessing Army leader effectiveness;

- Using this framework, identify potential "best practices" in assessing leadership performance; and

- Contribute to a "draft" tool kit, organized around the framework. The content of the tool kit will reflect potential appropriate Army leader assessment tools, and indicate shortfalls signaling future research needs.

In addition to the development of a potential leadership effectiveness assessment tool kit, the workshop had several other ancillary objectives. One was to provide a guide for active Army researchers to shape their studies on leadership. More specifically, this objective was intended to promote a greater alignment of research activities and goals to foster models that view the training, development and manifestation of leadership in the Army more systematically. Thus, the research questions being addressed at various labs and field sites could be coordinated in order to address Army needs. The workshop was also intended to be a forum for comparing different research programs among active leadership researchers in both the Army and academic communities, to uncover research priorities particularly in the field of leadership assessment, and to stimulate future research collaborations among participants in these two communities.

The agenda of the workshop, shown in Appendix G, was developed to promote a stimulating and expert exchange about leadership assessment, particularly in the Army. During the workshop, the initial sessions were plenary ones organized around three themes: (a) current leader assessment practices in the Army, (b) criteria for effective assessment instruments, and (c) nominations of measures for potential inclusion in the proposed toolkit. The plenary sessions were followed by small group discussions in which participants considered the strength and weaknesses of particular measures and made recommendations regarding their suitability according to criteria established during the plenary sessions. At the conclusion of the workshop, each group summarized their recommendations.

**Workshop plenary session:  Current practices and criteria for candidate measures**.
After introductions, the first major session focused on a discussion of current practices in the
Army pertaining to leader assessment.  This discussion, led primarily by active duty and retired
army officers, ended up being focused on the following topics:  (a) Officer Effectiveness Ratings
(OER); (b) informal assessments by commanding officers for development purposes; (c)
subordinate ratings of commanding officers; (d) observer/controller (OC) rating procedures; and
(e) after action reviews (AAR).  Each of these procedures were described, including a summary
of their perceived utility in assessment as well as their disadvantages.  Some conclusions from
this discussion were:

- leader assessment, whether formal or informal, is an ongoing activity in the
  Army;

- most, if not all, assessment procedures in active use emphasized primarily
  leadership processes, not outcomes;

- OERs, as the primary leader assessment tool in the Army, were judged as a
  flawed system because of the dichotomous choices, lack of variability in ratings,
  lack of a benchmark standard, and its lack of differentiation across organizational
  levels.  The "new" OER procedures, including a greater emphasis on discipline in
  the ratings, were judged as an improvement;

- often, formal assessments (i.e., OERs, OC ratings, AARs) were used as a context
  for leader development action plans; these formal assessments were sometimes
  augmented by informal assessment procedures designed by the administrating
  officer; and

- OC ratings were viewed as potentially useful means for leader process and
  outcome assessments within training contexts.  Discussants promoted the utility
  of a generic "template" for OC ratings that can provide information across
  different performance contexts.

The discussion generally, however, reflected a consensus that current assessment
practices were insufficient to meet the needs of the Army of the future, and that new measures,
particularly of leadership outcomes, were necessary for more effective evaluations of leadership
in training and operational settings.

The discussion was then directed toward the articulation of standards or criteria for
effective leader assessment tools:  Participants suggested that:

- assessments should be fairly parsimonious and user-friendly;

- assessments should be broad in scope, content valid, and be adaptable for military
  settings (i.e,. they should have military face validity);

- to be defensible, tools should be built upon a documented research record with sufficient psychometric evidence;

- assessments should not be susceptible to range restriction and other measurement biases;

- desirable assessment procedures include those that allow users to track growth and learning outcomes, including those related to self-development and distance learning efforts; and

- absent a specific tool that would work for several contexts or levels, user-friendly templates should be developed for those assessment procedures that are necessarily context specific.

**Workshop plenary session: Nominations of candidate measures**. After discussions of current assessments practices in the Army and criteria for candidate measures, workshop participants nominated measures for inclusion in the leader assessment toolkit. These nominations were the basis for small group discussions during the remainder of the workshop. Participants were initially asked to make nominations without detailed consideration of a measure's psychometric quality, or of the criteria listed above. These considerations were to be considered later as part of the tasks assigned to the small groups. Table 1 summarizes the measures, indicated mostly by acronym, nominated in each cell of the conceptual framework. Table 2 lists the acronym and title for each of the measures.

From Tables 1 and 2, it is clear that participants nominated a large number of measures, with a minimum of seven in any one cell in the conceptual framework. Both leadership processes and outcomes were amply represented, as were measures across organizational levels. It should be noted again that these nominations represented the starting points for small group discussions, not final endorsements. Indeed, as a result of careful scrutiny, many of these measures were abandoned in final recommendations.

**Workshop small group discussions**. Four groups were established for the break-out discussion period. Each group was assigned one level of analysis (i.e., individual, dyad, team, and unit) in the conceptual framework for their deliberations. They were asked to examine process and outcome measures for lower, middle, and upper level leaders at the group's assigned level of analysis. The small groups were also given the following charges:

- Consider the nominations in particular cells of the proposed toolkit matrix,

- Add additional nominations if necessary,

- Consider criteria for a good tool/measure as discussed earlier,

- Come up with appropriate templates, where no specific measures have been nominated,

- Classify nominations in terms of preferences and recommendations for further consideration, and

- Prepare for and lead a discussion of the group's recommendations at a later plenary session.

The members of each of the four discussion groups are indicated in Appendix H.

Each of the groups followed a similar plan. First, reflecting on the nature of effective leadership at the organizational level of interest, group members articulated and discussed the leadership processes and outcomes that needed to be considered in an assessment battery; i.e., they focused on the content of proposed measures. Tables 3-6 indicated both the processes and outcomes that were decided as the appropriate content for measures at the individual, dyad, team, and unit level, respectively.

The small groups then evaluated each of the measures nominated for their assigned level of analysis during the earlier session (see Tables 1 and 2) according to the content they defined earlier. They identified appropriate candidates for the proposed leader assessment toolkit and, perhaps more importantly, defined areas where measurement development research was necessary. Each group then presented its findings to all of the workshop participants in a final plenary session. The toolkit presented in this report was developed in part from these findings.

Table 1

Nominated Process and Outcome Measures by Organizational Level and Level of Analysis

| | Measures of Leader Effectiveness | | | | | |
| | Process Measures | | | Outcome Measures | | |
| Organizational Level: | Lower | Middle | Upper | Lower | Middle | Upper |
|---|---|---|---|---|---|---|
| **Individual** | Azimuth<br>CHET<br>CVI<br>MEI<br>MLQ<br>OC Ratings<br>S/H<br>TLI | Azimuth<br>CHET<br>CVI<br>MEI<br>MLQ<br>OC Ratings<br>S/H<br>SLDI<br>TLI | CHET<br>CVI<br>MLQ<br>OC Ratings<br>S/H<br>SLDI<br>TLI | Attribute Change<br>Benchmarks<br>CLI<br>CM<br>JDI<br>JSS<br>Morale<br>OCB<br>OC Ratings<br>TKI | Attribute Change<br>Benchmarks<br>CLI<br>CM<br>JDI<br>JSS<br>Morale<br>OCB<br>OC Ratings<br>TKI | Attribute Change<br>Benchmarks<br>CLI<br>CM<br>JDI<br>JSS<br>Morale<br>OCB<br>OC Ratings |
| **Dyad** | Azimuth<br>CHET<br>CVI<br>LBDQ<br>LMX-7<br>MEI<br>MLQ<br>MPS<br>OC Ratings<br>ROCI<br>S/H<br>TLI | Azimuth<br>CHET<br>CVI<br>LBDQ<br>LMX-7<br>MEI<br>MLQ<br>MPS<br>OC Ratings<br>ROCI<br>S/H<br>TLI | CHET<br>CVI<br>LMX-7<br>MLQ<br>OC Ratings<br>TLI<br>S/H | Attribute Change<br>CM<br>JDI<br>LMX-7<br>Morale<br>OCB<br>OC Ratings | Attribute Change<br>CM<br>Empower<br>JDI<br>Morale<br>LMX-7<br>OCB<br>OC Ratings | Attribute Change<br>CM<br>Empower<br>JDI<br>LMX-7<br>Morale<br>OCB<br>OC Ratings |

Level of Analysis

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## Measures of Leader Effectiveness (continued)

| Organizational Level: | Process Measures | | | Outcome Measures | | |
|---|---|---|---|---|---|---|
| | Lower | Middle | Upper | Lower | Middle | Upper |
| **Team** | ACC<br>Azimuth<br>CHET<br>CVI<br>LBDQ<br>MLQ<br>MLW<br>MPS<br>OC Ratings<br>Team-LMX<br>TLI | ACC<br>Azimuth<br>CHET<br>CVI<br>LBDQ<br>MLQ<br>MPS<br>OC Ratings<br>S/H<br>Team-LMX<br>TLI | ACC<br>CHET<br>CVI<br>MLQ<br>OC Ratings<br>S/H<br>Team-LMX<br>TLI | Cohesion<br>CM<br>JDI<br>Morale<br>OCB<br>OC Ratings<br>Target<br>Team -LMX<br>TES<br>TLMQ<br>TO | Cohesion<br>CM<br>JDI<br>Morale<br>OCB<br>OC Ratings<br>Target<br>Team-LMX<br>TES<br>TMLQ<br>TO | Cohesion<br>CM<br>JDI<br>Morale<br>OCB<br>OC Ratings<br>Target<br>Team-LMX<br>TES<br>TMLQ<br>TO |
| **Unit** | Azimuth<br>CHET<br>CVI<br>MLQ<br>OC Ratings<br>S/H<br>TLI | Azimuth<br>CHET<br>CVI<br>MLQ<br>OC Ratings<br>S/H<br>TLI | CHET<br>CVI<br>MLQ<br>OC Ratings<br>S/H<br>TLI | CM<br>Command Climate<br>Morale<br>ECATS<br>OCB<br>OC Ratings<br>Readiness<br>Resource<br>S/H<br>TO<br>Values | ACCESS<br>CM<br>Command Climate<br>CUS<br>Financial<br>Morale<br>ECATS<br>OCB<br>OC Ratings<br>Readiness<br>Resource<br>S/H<br>TO<br>Values | ACCESS<br>CEO Eval<br>CM<br>Command Climate<br>CUS<br>Financial<br>Morale<br>ECATS<br>OCB<br>OC Ratings<br>Readiness<br>Resource<br>S/H<br>TO<br>Values |

Level of Analysis

Table 2

Nominated Assessment Measures

| Acronym | Title |
| --- | --- |
| ACC | Adaptive Coping Cycle |
| ACCESS | Command and Control Evaluations Systems Decision Cycles |
| AZIMUTH | Leader Azimuth Check II |
| Benchmarks | Benchmarks |
| CLI | Campbell Leadership Index |
| CM | Conflict Management |
| Command Climate | U. S. Army Automated Command Climate Survey |
| CUS | Campbell Unit Survey |
| CVI | Competing Values Framework |
| ECATS | Climate Survey |
| Empower | Empowering Behavior Questionnaire |
| JDI | Job Descriptive Index |
| JSS | Job Stress Survey |
| LBDQ | Leader Behavior Description Questionnaire |
| LMX-7 | Leader Member Exchange-7 |
| MEI | Meeting Effectiveness Inventory |
| MPS | Managerial Practices Survey or Compass |
| Mission | Mission Accomplishment |
| MLQ | Multifactor Leadership Questionnaire |
| MLQT | Multifactor Leadership Questionnaire for Teams |
| OCB | Organizational Citizenship Behavior |
| OC Ratings | Observer Controller Ratings |
| OCQ | Organizational Commitment Questionnaire |
| Readiness | Readiness Indices |
| Resource | Resource Consumption |
| S/H | Shamir-Hunt Charisma Instrument |
| SLDI | Strategic Leader Development Inventory |
| TARGET | Simulated Combat Measure |
| Team LMX-7 | Team Leader Member Exchange-7 (adapting LMX-7) |
| TES | Team Effectiveness Survey |
| TKI | Tacit Knowledge Inventory |
| TLI | Team Leader Inventory |
| 360° | 360 Degree Assessment |

Table 3

Individual Level of Analysis Process and Outcome Measures for Lower, Middle, and Upper Organizational Levels

| | Measures of Leader Effectiveness | | | | | |
| | Process Measures | | | Outcome Measures | | |
| Organizational Level: | Lower | Middle | Upper | Lower | Middle | Upper |
| Level of Analysis — Individual | Charisma<br><br>Technical Skills | Charisma<br><br>Technical Skills | Charisma<br><br>Technical Skills | Commitment<br><br>Conceptual Growth<br><br>Higher Order Thinking<br><br>Moral | Commitment | Commitment |

Table 4

Dyad Level of Analysis Process and Outcome Measures for Lower, Middle, and Upper Organizational Levels

| | | Measures of Leader Effectiveness | | | | | |
| | | Process Measures | | | Outcome Measures | | |
| Organizational Level: | | Lower | Middle | Upper | Lower | Middle | Upper |
| Level of Analysis | Dyad | Clarifying Coaching Delegating Developing Mentoring Monitoring Motivating Providing Praise & Corrective Feedback Role Modeling Supporting | Clarifying Coaching Delegating Developing Managing & Leveraging Influence/ Power Mentoring Monitoring Motivating Providing Praise & Corrective Feedback Role Modeling Strategic Alliance Formation Supporting | Clarifying Coaching Delegating Developing Managing & Leveraging Influence/ Power Mentoring Monitoring Motivating Providing Praise & Corrective Feedback Role Modeling Strategic Alliance Formation Supporting | Commitment Empowerment Quality of Supervisor-Subordinate Relationship Satisfaction Trust | Commitment Empowerment Quality of Supervisor-Subordinate Relationship Satisfaction Trust | Commitment Empowerment Quality of Supervisor-Subordinate Relationship Satisfaction Trust |

Table 5

Team Level of Analysis Process and Outcome Measures for Lower, Middle, and Upper Organizational Levels

| Organizational Level: | | Measures of Leader Effectiveness | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | Process Measures | | | Outcome Measures | | |
| | | Lower | Middle | Upper | Lower | Middle | Upper |
| Level of Analysis | Team | Adaptability/ Innovative | Adaptability/ Innovative | Adaptability/ Innovative | Cohesion | Cohesion | Cohesion |
| | | Decision Making | Decision Making | Decision Making | Collective Efficacy | Collective Efficacy | Collective Efficacy |
| | | Boundary Spanning | Boundary Spanning | Boundary Spanning | Commitment | Commitment | Commitment |
| | | Communicating | Communicating | Communicating | Communication | Communication | Communication |
| | | Consideration | Consideration | Consideration | Coordination | Coordination | Coordination |
| | | Delegating | Delegating | Delegating | Creativity | Creativity | Creativity |
| | | Empowering | Empowering | Empowering | Discipline | Discipline | Discipline |
| | | Feedback | Feedback | Feedback | Espirit de Corps | Espirit de Corps | Espirit de Corps |
| | | Managing Resources | Managing Resources | Managing Resources | Ethical Climate | Ethical Climate | Ethical Climate |
| | | Modeling | Modeling | Modeling | Mission success | Mission success | Mission success |
| | | Monitoring Progress | Monitoring Progress | Monitoring Progress | Morale | Morale | Morale |
| | | Motivating | Motivating | Motivating | Norms | Norms | Norms |
| | | Openness to New Ideas | Openness to New Ideas | Openness to New Ideas | OCBs | OCBs | OCBs |
| | | Planning | Planning | Planning | Problem-Solving Ability | Problem-Solving Ability | Problem-Solving Ability |
| | | Promoting Team Identity | Promoting Team Identity | Promoting Team Identity | Psychological Health | Psychological Health | Psychological Health |
| | | Sets & Enforces Standards | Sets & Enforces Standards | Sets & Enforces Standards | Readiness | Readiness | Readiness |
| | | Task Coordination | Task Coordination | Task Coordination | Respect | Respect | Respect |
| | | Task Structuring | Task structuring | Task structuring | Satisfaction | Satisfaction | Satisfaction |
| | | Teaching & Developing | Teaching & Developing | Teaching & Developing | Team KSAs | Team KSAs | Team KSAs |
| | | Visioning | Visioning | Visioning | Trust | Trust | Trust |

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Table 6

Unit Level of Analysis Process and Outcome Measures for Lower, Middle, and Upper Organizational Levels

| Organizational Level: | Measures of Leader Effectiveness | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Process Measures | | | Outcome Measures | | |
| | Lower | Middle | Upper | Lower | Middle | Upper |
| Unit | Adapting<br>Assessing<br>Building<br>Communicating<br>Control<br>Behaviors<br>Decision Making<br>Developing<br>Evaluating<br>Goal /Mission<br>Development<br>Information<br>Processing<br>Informing<br>Learning<br>Organizing<br>Planning<br>Policy<br>Development<br>Visioning | Assessing<br>Building<br>Communicating<br>Control<br>Behaviors<br>Decision Making<br>Developing<br>Evaluating<br>Goal Mission<br>Development<br>Information<br>Processing<br>Informing<br>Learning<br>Organizing<br>Planning<br>Policy<br>Development<br>Visioning | Assessing<br>Building<br>Communicating<br>Control<br>Behaviors<br>Decision Making<br>Developing<br>Evaluating<br>Goal Mission<br>Development<br>Information<br>Processing<br>Informing<br>Learning<br>Organizing<br>Planning<br>Policy<br>Development<br>Visioning | Cohesion<br>Command<br>Climate<br>Commitment<br>Core Values<br>Equipment<br>Ethical Climate<br>Finance<br>Health & Safety<br>Job Involvement<br>Material<br>Readiness<br>Mission Success<br>Morale<br>People Readiness<br>Quality of Life<br>Retention/<br>Attrition<br>Satisfaction | Cohesion<br>Command<br>Climate<br>Commitment<br>Core Values<br>Equipment<br>Ethical Climate<br>Finance<br>Health & Safety<br>Job Involvement<br>Material<br>Readiness<br>Mission Success<br>Morale<br>People Readiness<br>Quality of Life<br>Retention/<br>Attrition<br>Satisfaction | Cohesion<br>Command<br>Climate<br>Commitment<br>Core Values<br>Equipment<br>Ethical Climate<br>Finance<br>Health & Safety<br>Job Involvement<br>Material<br>Readiness<br>Mission Success<br>Morale<br>People Readiness<br>Quality of Life<br>Retention/<br>Attrition<br>Satisfaction |

# APPENDIX B

## Summary Description of Selected Leader Assessment Measures

| Assessment Measures | Appendix |
|---|---|
| Benchmarks | B1 |
| Competing Values Framework | B2 |
| Empowering Behavior Questionnaire | B3 |
| Job Descriptive Index (JDI) | B4 |
| Leader Azimuth Check II (AZIMUTH) | B5 |
| Leader Member Exchange-7 (LMX-7) | B6 |
| Managerial Practices Survey (MPS) | B7 |
| Multifactor Leadership Questionnaire (MLQ) | B8 |
| Observer/Controller Ratings (O/C Ratings) | B9 |
| Tacit Knowledge Measure of Leadership (TKML) | B10 |
| Team Effectiveness Survey (TES) | B11 |
| Three-Component Model of Organizational Commitment | B12 |
| U. S. Army Automated Command Climate Survey | B13 |
| Walter Reed Army Institute of Research (WRAIR) Leadership Assessment Tool | B14 |
| 360 Degree Assessments | B15 |

| | |
|---|---|
| <u>Title</u>: | Benchmarks |

<u>Description</u>:     Benchmarks measures a wide spectrum of management behaviors. The manager and the manager's co-workers (peers, direct-report boss) complete the questionnaire. Benchmarks were constructed by studying managerial development. This methodology broadened the scope of the instrument to include managerial values and perspectives as well as skills. The questionnaire's purpose is twofold: to help identify trouble spots in potentially derailing managers and to suggest ways to build on the manager's strengths. The respondent's score is compared to others' ratings and to the Center of Creative Leadership norms. Foreign benchmark versions are available for English-speaking managers to get feedback from international raters.

<u>Reliability</u>:     Studies by McCall & Lombardo (1983) and McCall, Lombardo, & Morrison (1988) indicate moderate to high reliability for the scales.
- Internal consistency - Average alpha = .88
- Average test-retest coefficient for self-ratings = .72
- Average test-retest coefficient for ratings by others = .85
- Average Interrater agreement = .58.

<u>Validity</u>:     Construct validity was established by testing hypothesis about group differences on scale scores. The average ratings on Benchmarks by co-workers for 111 managers were correlated with scores on three scales: the Meyers-Briggs Type Indicator (MBTI); the Kirton Adaption-Innovation Inventory (KAI), and the Shipley Institute of Living Scale. Criterion validity correlated Benchmarks with criterion measures such as: bosses assessment of promotability, independent criterion of promotability, performance evaluation, and no promotion. The highest correlation was with bosses assessment of promotability; a multiple R of .46. (McCauley & Lombardo, 1990)

<u>Limitations</u>:     Some of the dimensions appear to be less predictive of managerial success (e.g., balance between personal life and work, over dependence, and setting developmental climate).

<u>Application</u>:     Benchmarks can be used for leader feedback and development purposes. The assessment tool should be completed by the leader being evaluated and by his or her peers.

Source:          Center for Creative Leadership
                 P.O. Box 26300
                 Greensboro, NC 27438-6300
                 Phone: (910) 288-7210
                 Fax: (910) 288-3999

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Title:                    Competing Values Framework

Description:              The Competing Values Framework, developed by Quinn & Rohrbaugh
                         (1981, 1983), purports four representative value dimensions are widely
                         employed in organizations. Each quadrant of the framework represents
                         one of four major models of organization and management theory: a
                         human relations model, an open systems model, an internal process model,
                         and a rational goal model. The human relations and the open systems
                         models share an emphasis on flexibility, while the open systems and the
                         rational goal models have an external focus. This framework is labeled
                         "Competing Values" because the criteria seem to carry a seemingly
                         conflicting message that effective performance requires both flexibility
                         and stability and control.

                         The Competing Values Framework also serves as a useful tool to organize
                         executive leadership (Hart & Quinn, 1993). Like organizational styles, the
                         framework suggests that there should be a balanced view of executive
                         leadership roles. When using the framework to integrate the leadership
                         literature, a more complete picture of executive leadership roles emerges.
                         Each quadrant of the model represents a domain of action with a role for
                         the executive. Within the four domains, the model posits that there are
                         four competing demands that all executive leaders face: innovation,
                         commitment, efficiency, and performance. The roles associated with these
                         demands are: Vision Setter, Motivator, Analyzer, and Task Master.

                         The Competing Values Framework assumes that tensions exist among
                         competing needs, tasks, and perceptions. The framework can assist people
                         in graphing their perceptions of their tensions. Individuals who engage in
                         diagnosis bring a particular conceptual framework to the task, even though
                         they may not be conscious of their attitudes. This diagnostic framework
                         using a competing methodology provides simple, concrete,
                         comprehensive, and easily applied model for organizational diagnosis and
                         analysis. The model provides a common language for discussions of
                         organizational effectiveness and performance as well as for facilitating
                         communication about organizational performance.

Reliability:             Hart & Quinn (1993) developed a 16 item questionnaire measuring the
                         four roles of leadership: Vision Setter, Motivator, Analyzer, and Task
                         Master. Internal consistency values for Vision Setter, Motivator,
                         Analyzer, and Task Master were .56, .71, .69, and .58, respectively.

Validity:                Hart & Quinn (1993) demonstrated construct validity of the four
                         leadership roles performing a factor analysis on the items. Four factors
                         emerged clearly reflecting the Vision Setter, Motivator, Analyzer, and

Task Master executive roles. The authors also demonstrated criterion-related validity of three of the four executive roles. Vision Setter was found to predict business performance ($R^2=.12$, $p<.01$) and organizational effectiveness ($R^2=.12$, $p<.01$); Motivator was found to predict organizational effectiveness ($R^2=.23$, $p<.001$); and Analyzer was found to predict business performance ($R^2=.12$, $p<.01$).

**Limitations:** The role of Task Master did not demonstrate criterion-related validity (Hart & Quinn, 1993). Further, future research needs to be conducted on the specific relationships that exist between the four executive roles and organizational performance. For example, it would be helpful to know if different executive leadership roles were required at different stages of an organization's cycle or for organizations in different industries.

**Application:** The Competing Values Framework is a self-assessment tool that can be used as to help executives assess their different leadership roles in an organization and evaluate how these different roles contribute to organizational effectiveness. The information provided by the assessment can be used for developmental purposes.

**Source:** Robert E. Quinn
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School of Business Administration, RM 3084
914 Hill Street
Ann Arbor, MI 48109-1234
Phone: 734-998-8159
e-mail: requinn@umich.edu

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APPENDIX B3

Title:                    Empowering Behavior Questionnaire

Description:              The Empowering Behavior Questionnaire is a multidimensional measure
                         of psychological empowerment in the workplace. Originally
                         conceptualized by Thomas and Velthouse (1990) and later developed by
                         Spreitzer (1995), psychological empowerment is a motivational construct
                         involving four cognitions: meaning, competence, self-determination, and
                         impact. These four cognitions reflect an active role of work orientation.

                         The meaning, competence, self-determination, and impact scales each
                         consists of three items adopted from other measures. The meaning scale
                         contains three items developed by Tymon (1988); the competence scale
                         contains three items from Jones's (1986) self-efficacy scale; the self-
                         determination scale contains three items from Hackman and Oldham's
                         (1985) autonomy scale; and the impact scale contains three items from
                         Ashforth's (1989) helplessness scale.

Reliability:             Coefficient alpha reliability analysis was conducted on two samples of
                         mid-level employees from an industrial and insurance organization. The
                         overall empowerment construct was .72 for the industrial sample and .62
                         for the insurance sample. Test-retest reliability was performed for the
                         insurance sample. Results indicated moderate stability of the
                         empowerment scale over time (Spreitzer, 1995).

Validity:                A second order confirmatory factor analysis was conducted on two
                         samples of mid-level employees from an industrial and insurance
                         organization to assess the convergent and discriminant validity of the
                         empowerment items and the contribution of the four dimensions to the
                         overall construct empowerment (Spreitzer, 1995). Results indicated that
                         each of the dimension were distinct from one another. Confirmatory
                         factor analysis demonstrated an excellent fit for the industrial sample, and
                         a modest fit for the insurance sample. The dimensions also demonstrated
                         convergent validity showing relation with an overall construct of
                         psychological empowerment. Each of the items loaded strongly on the
                         appropriate factor, and the four factors were significantly correlated with
                         each other in both samples.

Limitations:             While results demonstrated that the four dimensions were not equivalent,
                         the high correlation among the factors (e.g., the impact scale correlated .43
                         with meaning and .63 with self-determination) leads to speculation
                         whether each dimension is indeed measuring distinct constructs.

Application:             No information was available to guide suggestions on the application of
                         the Empowering Behavior Questionnaire.

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## References* and Suggested Readings

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| | |
|---|---|
| <u>Title:</u> | Job Descriptive Index (JDI) |
| <u>Description:</u> | The JDI is one of the most widely used measures of job satisfaction. It consists of five scales: work, pay, promotion, supervision, and co-workers. For each scale, respondents respond to a list of short phrases indicating if the phrase applies to a particular facet of his or her job (e.g., pay). |
| <u>Reliability:</u> | Evidence in the literature indicates good stability coefficients and internal consistency for the JDI scales. Schuler (1979) reported test-retest coefficients ranging from .79 to .82. Roznowski (1989) reported alpha coefficients ranging from .76 to .88. |
| <u>Validity:</u> | Research suggests that the facets of job satisfaction measured by the JDI appear to be moderately independent, with median interscale correlations ranging between .22 and .43 (Cook, Hepworth, Wall, & Warr, 1981). Convergent and discriminant validity were tested by comparing the JDI facet scales to related measures such as the Minnesota Satisfaction Questionnaire (MSQ) and the Index of Organizational Reactions (IOR). Dunham, Smith, and Blackburn (1977) compared JDI facet scales to the MSQ, and reported an average convergent validity coefficient of .47. The discriminant validity results reported in the literature are somewhat less promising (e.g., Hartman, Grigsby, Crino, & Chokar's 1986 study concluded the five facets of the JDI met only two of the researchers' three criteria). |
| <u>Limitations:</u> | The scales were developed prior to the rise of interest in intrinsic job satisfaction and under represent such facets (e.g., helping others, enjoying social aspects of work, being challenged, producing quality products).<br><br>In addition, some scales are shorter than others in terms of number of items per scale. Thus, the short scales are more likely to under represent the content of those facets of job satisfaction. |
| <u>Application:</u> | The JDI can be used to assess a subordinate's level of satisfaction with the supervisor. Assessing job satisfaction of subordinates in aggregate can help to evaluate organizational climate. |
| <u>Source:</u> | Patricia C. Smith, Lorne M. Kendall, or Charles L. Hulin<br>Bowling Green State University |

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Title:                 Leader Azimuth Check II (Azimuth)

Description:           The Leader Azimuth Check is a 360-degree multi-rater assessment that is
                      derived from the Strategic Leader Development Inventory (SLDI) which
                      was jointly developed by the Army Research Institute (ARI), the Army
                      War College (AWC), and the Industrial College of the Armed Forces
                      (ICAF).

                      There are two current versions of the Leader Azimuth Check: Azimuth
                      Version 2.0 (Unit and Organizational Use) and Azimuth Version 2.1
                      (CAS3 and other classroom settings).

Azimuth (Version 2.0):

                      The 96 items that made up the first Azimuth (Version 1) represented
                      twelve "elements" of leadership:

                      *Supervisory Skills.* This broad element of leader behavior is broken out
                      into three sub-elements: interpersonal focus, team focus and mission
                      focus. The interpersonal sub-element examines the way in which
                      supervisors interact with subordinates. The team focus sub-element looks
                      at leadership in developing, motivating, and resourcing of teams. Mission
                      focus examines leaders creating an environment to support subordinates
                      accomplishing their mission.

                      *Tactical and Technical Competence.* Tactical and technical competence is
                      also broken down into three specific sub-elements: problem solving skills,
                      knowledge, and planning/organizational skills. The problem solving skills
                      sub-element looks at decision-makers' ability to sort out the important
                      from the unimportant details. The knowledge sub-element looks at the
                      degree to which leaders are accomplished professionals in their technical
                      or tactical area of expertise. The planning and organizational skills sub-
                      element is concerned with leaders' ability to meet deadlines and maintain
                      focus on primary issues even when other things compete for attention.

                      *Political Skills.* This element is concerned with sensitivity to political
                      issues and interests beyond the purely military.

                      *Ethics.* This element is concerned with personal and professional
                      standards of conduct, and includes the ability to set the proper example of
                      high standards of interpersonal responsibility and honesty.

                      *Communication/Influence.* This element includes the establishment and
                      maintenance of both formal and informal channels of communication and

information dissemination, as well as the ability to provide an atmosphere conducive to openness and honesty.

*Social Maturity.* This element is concerned with a leader's ability to maintain composure under conditions which may be personally threatening, the ability to admit and learn from mistakes, and the willingness to consider the opinions of others.

*Self-Centeredness.* This is a negative element in which the related behaviors should be avoided. This element is centered around the focus on self and lack of concern and care for others.

*Compulsive Behavior.* Like the element above, this element is concerned with behaviors that are indicators of poor leadership. This element examines the tendency to micromanage, be intolerant of ambiguity, and to desire excessive information before making decisions.

Feedback from the Azimuth is structured according to the elements and is given in aggregate and not item-by-item.

## Azimuth (Version 2.1):

The 72 items in the current Azimuth (Version 2 and Version 2.1) were selected to represent key leadership elements in the new Army leadership doctrine (FM 22-100). The items were derived from two sources. Some items were used in the previous version of Azimuth and were retained because feedback from the several thousand officers who had used the previous version, and statistical evidence, showed that most respondents had a consistent interpretation of these items (i.e., the items are statistically "reliable"). Additional items were derived directly from the element definitions and descriptions in FM 22-100. ARI and CAL personnel collaborated in this process, and a draft instrument was pilot tested with a small group of AY96-97 CGSOC students. One goal was to keep the number of items as small as possible to keep the instrument from becoming unwieldy. However, five or six short items cannot possibly capture all of the nuances of a complex behavior like Communicating or Decision Making. In their feedback forms, leaders are told that they can assume that the average item ratings, i.e., the element scores, are a good indicator of a given aspect of their leadership behavior; however, they should not assume that the scores are an absolute assessment of their leadership.

The Azimuth items are divided into the following areas: Communicating; Decision Making; Motivating; Developing, Building (i.e., team building); Learning (i.e., supporting a learning organization); Planning and Organizing; Executing; Assessing; Respect; Selfless Service; Integrity;

Emotional Stability; and Other. Two general items are analyzed and reported separately: "This person is a good leader"; and "This person is someone I would follow into combat." Three additional items solicit feedback on the Azimuth form itself and on the data-collection process.

Feedback is presented on each of the aspects of Leadership, but not on the individual items (with, of course, the exception of the two general items). However, individual item data is printed out for use by a mentor or advisor who can help to interpret the feedback (see Karrasch and Halpin, 1999).

Azimuth Version 2 was designed as a 360-degree instrument for use in a unit or organization. Early experience with a pilot implementation within the Combined Arms and Services Staff School (CAS3) led to a decision to develop a minor variant, Version 2.1, for use within an academic setting. Changes include: a) provision for Self and Peer input only (i.e., 180-degree rather than 360-degree); and b) rewording of items to reflect the classroom rather than an organizational setting. The Center for Army Leadership (CAL) has also developed at least one additional variant that eliminates "negative" items.

**Reliability and Validity:**

Periodic checks are conducted on the thousands of data sets that have accumulated through the use of Azimuth in operational and classroom settings over the past few years. The Chronbach alpha for all elements is typically above .80. A detailed assessment of the psychometrics of the instrument has been accepted as a dissertation topic, and the results should be available in early 2000.

**Limitations:**

The Azimuth does not provide an absolute assessment of leadership qualities or potential. The individual items in the instrument provide good coverage of important leadership behaviors, however, there are many other aspects of leadership which are not addressed by this instrument. Furthermore, the numeric ratings are subjective and may be based upon incomplete information, limited opportunities for observation, and potential unconscious biases.

**Application:**

The Azimuth can be used for feedback and developmental purposes for the leader. The Azimuth should be completed by the leader, peers, subordinates, and the supervisor.

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References* and Suggested Readings

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Title:                          Leader Member Exchange-7 (LMX-7)

Description:            The LMX-7 is a seven-item instrument that measures how leaders use
                              their position power to develop different exchange relationships with
                              different subordinates.  The LMX-7 suggests that supervisors employ a
                              social exchange framework in which varying types of relationships are
                              established with subordinates.

Reliability:             Scandura and Schriesheim (1994) reported a coefficient alpha reliability of
                              .86 for the LMX-7 measure.

Validity:                 The literature on leader-member exchange (e.g., Graen & Scandura, 1987)
                              and mentoring (e.g., Scandura, 1992) have established clear links between
                              the developmental activities of superiors, or mentors, and the career
                              outcomes of subordinates, or proteges.

                              Gerstner and Day (1997) conducted a meta-analysis on the LMX-7
                              measure and reported significant relationships between LMX and job
                              performance, satisfaction with supervision, overall satisfaction,
                              commitment, role conflict, role clarity, member competence, and turnover
                              intentions.  Thus, the meta-analysis showed that the LMX-7 measure has
                              sound psychometric properties and that the LMX is congruent with
                              numerous empirical relationships associated with transformational
                              leadership.

Limitations:           Dienesch and Liden (1986) suggested that LMX studies need to expand
                              the domain of variables examined as part of the leader-subordinate
                              interaction process.  Augmenting the LMX approach with aspects of
                              transformational leadership, such as mentoring, may be very beneficial.
                              Adding mentoring to LMX expands the boundaries of the leader-
                              subordinate relationship considerably.

Application:          The LMX-7 can be used to assess the leader's ability to communicate with
                              his or her employees. describes how leaders use their position power to
                              develop different exchange relationships with different subordinates. For
                              example, when high levels of leader-member exchange exist, subordinates
                              see themselves as having good working relationships with their
                              supervisors and as knowing how satisfied their supervisors are with their
                              performance. Used for leader-subordinate exchange development

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## References* and Suggested Readings

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| Title: | Compass - the Managerial Practices Survey (MPS) |
| Description: | The Managerial Practice Survey (MPS) instrument is designed to provide managers with information about their current behaviors on the job, to help them identify their strengths, and to expand their repertoire of effective management practices. Based on a 15-year research program, MPS measures 14 categories of management and leadership behaviors. These are: informing, clarifying, monitoring, planning, problem solving, consulting, delegating, inspiring, recognizing, rewarding, supporting, mentoring, networking, and team building. The wording of the items on the MPS make them suitable for use by peers as well as subordinates. |
| Reliability: | As cited in Clark & Clark (1990), Yukl, Wall, & Lepsinger reported an internal consistency for the MPS scales that ranged from .84 to .91, for a sample of 1,173 subjects. Test-retest reliability was tested for the stability of the MPS scales and results ranged from .48 to .94.

Interrater reliability was also tested for agreement between subordinates with respect to their descriptions of the manager's behavior. The researchers found managers differ in their behavior and subordinate ratings can detect this difference. The F-Tests were significant at the .01 level for all 13 scales. |
| Validity: | Several studies suggest that behaviors in the MPS are relevant for managerial effectiveness (e.g., Wall and Lepsinger, 1984, 1985 and 1986 as cited in Clark & Clark, 1990). Content validity was well established with correct classification ranging from 72% to 96% (Taber & Falble, 1984, 1985, 1986, and 1988 as cited in Clark & Clark, 1990). Finally, the criterion-related validity of the MPS was tested in several studies (Yukl & Kanuk, 1979; Yukl & Van Fleet, 1982; Miles, 1985). Across all studies, there was evidence for the relevance of most criteria for managerial effectiveness. |
| Limitations: | Although the MPS's target audiences are managers at all levels, reliability and validity studies were conducted among mid-level managers only. |
| Application: | The MPS can be used to assess subordinates' perceptions of leader behavior. Subordinates complete the questionnaire and results can be fed back to the leaders for developmental purposes. |

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References* and Suggested Readings

*Clark, K. E., & Clark, M. B. (1990).  Measures of Leadership.  West Orange, NJ: Leadership Library for America Inc.

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*Yukl, G. A., & Van Fleet, D. (1982). Cross-situational, multi-method reasserts on military leader effectiveness.  Organizational Behavior and Human Performance, 30, 87-108.

Title:                     Multifactor Leadership Questionnaire (MLQ)

Description:               The Multifactor Leadership Questionnaire (MLQ) is an 80 item measure
                          of transformational and transactional leadership skills. The MLQ
                          measures several dimensions of leadership and the leader's perception of
                          his or her effectiveness. The MLQ consists of several scales measuring
                          the constructs of transformational leadership, transactional leadership,
                          organizational outcome, and non-transactional leadership. The five scales
                          that measure transformational leadership include charisma, inspiration,
                          intellectual stimulation, and individualized consideration. The three scales
                          measuring transactional leadership include contingent reward, active
                          management by exception, and passive management by exception.
                          Finally, there are three organizational-outcome scales: extra effort,
                          effectiveness, and satisfaction with leader. There is one scale for non-
                          transactional leadership.

                          The leader and raters across three organizational levels (higher, same and
                          lower) complete the MLQ. An option is provided to conceal rater's
                          organizational level.

Reliability:              Alpha reliability coefficients for the self-rating form range from .60 to .92.
                          Test-retest reliabilities of the self-rating form were collected over a six-
                          month period. Reliabilities for the factor scales range from .44 to .74
                          (Bass & Avolio, 1990).

Validity:                 Criterion-related validity has been demonstrated using supervisors'
                          ratings, promotion reports, and financial outcomes. Both transformational
                          and transactional leadership were found to correlate highly with these
                          outcomes.

                          Additionally, evidence of agreement with theory is demonstrated by the
                          high intercorrelations among the four transformational factors and lower
                          correlations between the transformational and transactional factors (Bass
                          & Avolio, 1990). Lowe, Kroeck, & Sivasubramaniam (1996) conducted a
                          meta-analytic review of 39 published and unpublished studies that
                          employed the MLQ to measure transformational leadership and
                          transformational leadership relationships, including charisma and leader
                          effectiveness. The reported correlations between leader charisma and
                          subordinate ratings of effectiveness ranged between .36 and .91, with a
                          mean corrected correlation of .81. The correlations between leader
                          charisma and organizational measures of effectiveness (either direct
                          measures of performance or performance evaluations) ranged between .10
                          and .83, with a mean corrected correlation of .35.

| Limitations: | Charismatic and inspirational leadership sub-scales may converge to capture a global conceptualization of charismatic leadership. Also, it has been argued that the MLQ assesses a single higher order construct of transformational leadership and that there is little evidence to support the contention that the MLQ measures distinct transformational leader behaviors. For example, correlation coefficients of .79 and .81 found among the transformation factors may indicate that unique factors are not being measured. |
|---|---|
| Application: | The MLQ can be used to measure leadership qualities of individuals in all types of organizations and all organizational levels. Additionally, the MLQ can be used to assess subordinates' perceptions of leader effectiveness. Depending on the intended use, the MLQ should be completed by the leader or the leader's subordinates. |
| Source: | Mind Garden, Inc. P.O. Box 60669 Palo Alto, CA 94306 Phone: (415) 424-8493 Fax: (415) 424-0475 e-mail: mindgarden@msn.com. |

## References* and Suggested Readings

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APPENDIX B9

Title:                 Observer/Controller Ratings (O/C Ratings)

Description:           Observer/Controller training programs provide Observer/Controllers
                       (O/C's) the necessary skills to assess Battle Staff functioning and
                       effectiveness. The training programs were designed to complement
                       established Combat Training Center (CTC) assessment procedures with
                       the additional objective of assessing individual and integrated staff
                       functional skill performance. O/C's are trained to identify and record
                       critical behaviors related to battle staff effectiveness and report critical
                       incidents for effective remediation.

                       Development of the O/C training program is based on earlier theoretical
                       work on the Adaptive Coping Cycle model of organizational effectiveness
                       (Olmstead, 1992) which consists of seven processes: sensing,
                       communicating information, decision making, communicating
                       implementation, stabilizing, coping actions, and feedback. For purposes
                       of applying the conceptualization of the Adaptive Coping Cycle to the
                       Army, the terminology was modified. Acquired information replaces
                       sensing; communicating decisions replaces communicating
                       implementation; contingency actions replaces stabilizing; executing
                       replaces coping actions; and feedback and follow-up replaces feedback.
                       These seven processes are suggested for use in military simulations to
                       determine battle staff effectiveness.

                       The materials used to train O/Cs include an Instructor Guide, a Student
                       Guide, and Course Reference Material. The Instructor Guide primarily
                       provides an introduction to the training material, training objectives,
                       lesson plans and training aids. The Student Guide primarily provides an
                       overview of the O/C training program, training course objectives, and
                       references relevant to functional competence of organizations. Finally, the
                       Course Reference Material primarily includes a guide for analyzing and
                       assessing battle staff functions.

Reliability:           Since O/C ratings refer to the generic process and outcomes of O/C
                       activities, studies discussing an overall reliability of the ratings have not
                       been conducted.

Validity:              Similarly, studies discussing the validity of O/C ratings have not been
                       conducted.

Limitations:           Some of the O/C training program instructions have not been translated
                       into Army terminology. Further, detailed vignettes or case studies from
                       current Army Operations should be included in each instructional unit to
                       better relate the material to Army doctrine and Battle Staff Operations.

Application:      O/C Ratings has been used for assessing soldiers' performance in battle staff simulations. Additionally, O/C Ratings were used for training Observer Controllers in the ratings of battle staff effectiveness. The template may be adapted for assessing performance in other simulation environments.

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References* and Suggested Readings

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Title:                 Tacit Knowledge for Measure of Leadership (TKML)

Description:           The Tacit Knowledge for Military Leadership instrument is a measure that
                       assesses military leader tacit knowledge. Tacit knowledge can be
                       described as action-oriented, practical knowledge that can be acquired on
                       one's own through personal experience rather than instruction. Tacit
                       knowledge in military leadership consists of many dimensions, but three
                       have been investigated extensively. The three dimensions are 1)
                       interpersonal tacit knowledge which requires the leader to manage
                       him/herself in terms of organizing one's own self, managing time and
                       priorities, seeking challenges and control, and taking responsibility; 2)
                       interpersonal tacit knowledge which requires the leader to influence and
                       control others, support and cooperate with others, and learn from others;
                       and 3) organizational tacit knowledge which requires the leader to solve
                       organizational problems.

                       The TKML consists of several work-related situational items with five to
                       twenty responses. Each situation poses problems, and the participant
                       indicates how he or she would solve it by rating the responses. The
                       difference between the respondents' set of ratings from the standard of
                       experts' ratings for all of the situations is the individual's measure of his
                       or her tacit knowledge.

                       The TKML instruments have been designed for use on battalion
                       commanders, company commanders and platoon leaders. The dimensions
                       of tacit knowledge for the battalion commander include: communicating a
                       vision, establishing a climate for development, managing the leader and
                       the subordinate, providing constancy, and using influence tactics. The
                       dimensions of tacit knowledge for the company commander include:
                       caring for soldiers through task completion, prioritizing and solving
                       problems, proactive decision making, assessing risk, and short term
                       decision making. The dimensions of tacit knowledge for the platoon
                       leader are: acquiring confidence in interpersonal skills, defining leadership
                       style, taking a stand, and taking a fostering accountability.

Reliability:           TKML items were developed by conducting interviews with active duty
                       Army officers. Tacit knowledge contained in the interview summaries
                       was identified and coded by two researchers. Interrater reliability was
                       73%. The summaries were then reviewed by three senior military
                       members to achieve content consensus (Hedlund, Horvath, Forsythe,
                       Snooks, & Williams, 1998).

Validity:              Tacit knowledge has been found to increase with experience. The TKML
                       was found to discriminate experienced individuals from those who are not

experienced.  Testing of the TKML demonstrated that experienced leaders displayed higher levels of tacit knowledge than novice leaders.  A discriminant analysis provided support that experienced and novice leaders responded differently to the TKML items.  Canonical correlation coefficients were R=.73, p<.05; R=.72, p<.05; R=.55, p<.05 for battalion commanders, company commanders, and platoon leaders, respectively (Hedlund, et al., 1998).

Criterion-related validity was also found for the TKML.  The instrument correlated .3 to .5 with job performance measures.

Limitations:     More conclusive evidence of the generalizability is needed for the TKML. Additionally, further research on the construct and criterion-related validity is necessary which is in progress.

Application:     The TKML may be useful in development of officer training. Additionally, the TKML may be used as part of a selection battery for military leaders. Because the TKML is a self-assessment tool, it should only be completed by the leader

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Title:                   Team Effectiveness Survey (TES)

Description:       The Team Effectiveness Survey (TES) is a measure designed to assess process issues associated with team dynamics. Specifically, the TES assesses team functioning and identifies individuals who are primarily responsible for the team's style of functioning. It is based on the assumption that team effectiveness will improve as team members understand more about their own interactional tendencies and discuss these tendencies with team members.

The TES measures individual and team scores of exposure (the tendency to engage in open expressions of one's own feeling and knowledge) and feedback (the tendency to solicit information from others about their feelings and knowledge). These two dimensions are proposed to influence the effectiveness of communication and problem solving. Exposure and feedback scores identify four types of individuals and/or teams:
Type A - low feedback and low exposure;
Type B – high feedback and low exposure;
Type C – low feedback and high exposure; and
Type D – high feedback and high exposure. These profiles serve as immediate feedback to confirm or deny self-ratings and furnish an overview of team functioning.

The TES also measures supportive and defensive climates. High defensive climate scores and low supportive climate scores indicate that the individual has a constraining effect on the team and fosters a lack of trust among team members. Conversely, high supportive climate scores and low defensive scores indicate that the individual works well with the team and encourages feelings of well-being. Both individual and team scores are calculated with the TES. Each team member will have a score on the four dimensions (exposure, feedback, defensive climate, and supportive climate) and a group average for each dimension.

Reliability:        Interjudge reliability has been established as .68 (Hall, 1996).

Validity:           No construct or criterion-related validity studies have been reported. Therefore, the TES is suitable only for concept training and as a stimulus to team discussion (Hall, 1996).

Limitations:       Concern has been expressed toward the construct validity of the TES. For example, it is proposed that exposure and feedback are not independent constructs. There is no evidence of the empirical validity of the scores and inferences of team or individual effectiveness. Researchers need to

demonstrate that the instrument does indeed measure team effectiveness before adopting this instrument.

Application:       The TES can be used for team building, training and development, or developmental purposes. It is designed to evaluate individual team members' teamwork practices. This information can be used to help improve team functioning and communication. The TES should be completed by team members themselves.

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Title:              Three-Component Model of Organizational Commitment

Description:        Meyer and Allen's (1991) Three-Component Model of Organizational
                    Commitment contains three forms of commitment: affective, continuance,
                    and normative. Affective commitment reflects the employee's emotional
                    attachment to, identification with, and involvement in the organization.
                    Employees with a strong affective commitment remain with an
                    organization because the *want* to do so. Continuance commitment refers
                    to an awareness of the costs associated with leaving an organization.
                    Employees who continue employment with an organization based on
                    continuance commitment remain because they *need* to do so. Finally,
                    normative commitment reflects a feeling of obligation to continue
                    employment. Employees with a strong normative commitment feel that
                    they *ought* to remain with the organization (Meyer & Allen, 1997).
                    Common to these three approaches is the view that commitment is a
                    psychological state that (a) characterizes an employee's relationship with
                    the organization and (b) has implications for the decision to continue or
                    discontinue employment in the organization ( Meyer, Allen, & Smith,
                    1993).

                    The Affective, Continuance, and Normative Commitment Scales (revised)
                    consists of 6 items each (Meyer et al., 1993). Responses to each item are
                    made on a 7-point scale with anchors labeled (1) strongly disagree and (7)
                    strongly agree. For administration, items from the three scales are mixed
                    to form an 18-item series

Reliability:        Measures of the three components of organizational commitment were
                    developed and found to be psychometrically sound (Allen & Meyer,
                    1990). Internal consistency for the three scales range from a low of 20 for
                    Normative Commitment Scale to a high of 40 for the Affective
                    Commitment Scale. Median reliabilities for the Affective, Continuance,
                    and Normative Commitment Scales are .85, .79, and .73, respectively.
                    (Allen & Meyer, 1996; Meyer & Allen, 1997). Test-retest reliability
                    coefficients range from .38 (Vandenberg & Self, 1993), .60 (Meyer, et al.,
                    1993) to .94 (Blau, Paul, & St. John, 1993).

Validity:           Exploratory (Allen & Meyer, 1990; McGee & Ford, 1987; Reilly & Orsak,
                    1991) and confirmatory (Dunham, Grube, & Castaneda, 1994; Hackett,
                    Bycio, & Hausdorf, 1994; Meyer. Allen, & Gellatly, 1990; Shore &
                    Tetrick, 1991; Somers, 1993) factor analyses support that affective,
                    continuance, and normative commitment are distinct constructs. Results
                    of factor analyses studies also provide evidence that the commitment
                    constructs are distinguishable from related constructs, e.g., job satisfaction
                    (Shore & Tetrick, 1991), career, job, and work values (Blau et. al., 1993),

career commitment (Reilly & Orsak, 1991), occupational commitment (Meyer et al., 1993), and perceived organizational support (Shore & Tetrick, 1991).

Limitations:    While the research is generally supportive, some findings suggest the need for further refinements in the conceptualization and measurement of commitment (Meyer & Allen, 1997). For example, the continuance scale may comprise two related dimensions: lack of alternative and high personal sacrifice (Hacket et al., 1994; McGee & Ford, 1987; Meyer et al., 1990; Somers, 1993). Other studies have found high correlations between affective and normative scales (Allen & Meyer, 1996; Hackett et al., 1994; Ko, 1997).

Another limitation is that temporal stability appears to be lower when commitment is measured early in employees' careers (e.g. less then one month as studied by Vandenberg & Self, 1993) though it does begin to stabilize fairly quickly (e.g., after one month as studied by Meyer et al., 1993). Therefore, these scales may not be appropriate for use with new employees.

Application:    U.S. Army Research Institute (ARI) has employed a 15-item measure based on the Meyer and Allen Three-Component Scales (Oliver, Tiggle, & Hayes, 1996). The Meyer and Allen instrument was modified by substituting "the military" for "my organization" and deleting items which did not apply to the military. These scales can also be modified by using a 5-point Likert scale. Each scale can also be used independently. For example, Oliver et al. (1996) employed only two scales (affective and continuance commitment) using a 5-point scale with results mirroring similar Three-Component Model studies (e.g., McGee & Ford, 1987).

While the Three-Component Scales were developed as an independent questionnaire, their brevity affords the opportunity to integrate the items into or with other measures of interest. Also, the measures can be usefully employed as both an diagnostic or research tool.

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Title:                    U.S. Army Automated Command Climate Survey

Description:         The U.S. Army Automated Command Climate Survey is a fully automated, self-contained, survey program. It is designed to assist the company (or equivalent-sized unit) commander in assessing and developing action plans for sustaining and improving his or her unit command climate.

The Command Climate Survey consists of 24 basic questions and two comment questions, which address 20 command climate areas. In addition, the unit commander can add up to ten optional unit-specific questions. The 20 climate areas include: officer leadership, NCO leadership, immediate supervisor, leader accessibility, leader concern for families, leader concern for single soldiers, unit cohesion, counseling, training, racist materials, sexually offensive materials, stress, training schedule, sponsorship, respect, unit readiness, morale, sexual harassment, discrimination, and reporting harassment/discrimination incidents. Additional questions on gender and race are asked. Written comments are requested regarding unit strengths and areas most needing improvement.

The survey results may provide indicators of strengths and issues in a unit. In addition, the program automatically encrypts the data to protect soldiers' anonymity. The survey results help the commander determine his or her unit climate and assist in development and implementation of actions for improvement.

Company commanders are encouraged to perform a Command Climate Survey within 90 days of assuming command to help them assess a variety of issues, including unit readiness, racial and sexual harassment climate, and morale. Army officials indicate this survey will likely become a requirement.

Reliability:         No reliability studies have yet been performed.

Validity:            No reliability studies have yet been performed.

Limitations:       No evidence of validation or reliability has been reported.

Application:        The Command Climate Survey can be used to identify problems in a commander's unit and help to develop solutions. The survey is designed as a self-contained, stand-alone tool for the commander. The commander can administer the survey, score or tally the results, and conduct the analysis to assess his or her unit's current climate.

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References and Suggested Readings

Reimer, D. J. (1998). Developing great leaders in turbulent times. Military Review, 78(1), 5-12.

Title:                    Walter Reed Army Institute of Research (WRAIR) Leadership
                         Assessment Tool

Description:             This measure uses human dimensions to assess and monitor how changes
                        in work environments impact soldiers and leaders. This measure has
                        provided a method of (1) quantifying and recording how the work
                        environment of soldiers and leaders change as a function of external
                        factors and (2) estimating the organizational impact of these changes.

                        The measure has the following scales, each testing a different human
                        dimension: task significance, support for task significance, support for
                        unit's mission information, dissemination unit leadership/vertical
                        cohesion, peer relations/horizontal cohesion, job satisfaction, and
                        collective efficacy.

Reliability:            Bliese and Halverson (1996, 1998), Marlowe (1986), and Cammann,
                        Fichman, Jenkins & Klesh, (1983) have tested the reliability of the scales.
                        All researchers found moderately high Cronbach Alpha coefficients (.81 to
                        .92). However, the role clarity and work overload scales showed
                        moderately low reliability.

Validity:               No validity studies were completed on this measure.

Limitation:             The most significant limitation of the measure is the lack of data
                        supporting the validity of the measure. Further, while the entire package
                        of scales is convenient, more current measurement scales are available for
                        the individual dimensions (e.g., commitment).

Application:            The WRAIR assessment tool can be can be tested on unit soldiers to
                        identify what external factors influence soldiers and their working
                        environments. Results from the assessment can be used to evaluate
                        organizational climate.

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Title:                    360-Degree Assessments

Description:              The term 360 degree feedback refers to the practice of gathering and
                         processing multirater assessments on individuals and then feeding back
                         the results.  Typically, a 360-degree instrument is a questionnaire with
                         about 100 items to rate.  Approximately 10 people (raters) complete it: the
                         person being assessed (self-rating), his or her supervisor, several peers,
                         and subordinates.  It is recommended that 360-degree feedback reports be
                         confidential (between supervisor and respondent) and that an outside
                         consultant deliver assessment feedback and coaching.

                         In the majority of organizations, 360-degree feedback is used for
                         developmental purposes.  Ratings are collected anonymously and provided
                         to managers in the aggregate.  Usually, only the managers being rated see
                         the feedback report.  The ratings are not included in the managers' formal
                         performance appraisal.

Reliability:             A study investigated within-source interrater reliability of supervisor, peer,
                         and subordinate feedback ratings made for managerial development.
                         Raters provided 360-degree feedback ratings on a sample of 153
                         managers.  Using generalizability theory, results indicated little within-
                         source agreement exists  (Harris & Schaubroeck, 1988).

Validity:                Harris and Schaubroeck (1988) conducted a meta-analysis and found
                         relatively high correlations between peer and supervisor ratings, but only a
                         moderate correlation between self-supervisor and self-peer ratings.  They
                         also found that, while rating format and rating scale had little impact, job
                         type appeared to moderate self-peer and self-supervisor ratings.  The
                         analysis showed a higher convergence between observer (peer and
                         supervisor) ratings than self and observer ratings.  Self-peer and self-
                         supervisor ratings are particularly low for managerial/professional staff.

Limitations:             Disagreement among rating sources is both common and expected.  In a
                         hierarchical organization, the 360-degree approach violates the hierarchy
                         of organizational practices.  Research suggests that upward feedback can
                         substantially affect the acceptance of feedback for managers.  Bernardin,
                         Dahmus, & Redmon (1993) demonstrated that supervisors are generally
                         accepting of upward feedback, but they are less supportive of this
                         feedback if it only comes from subordinates.

                         Also, 360-degree feedback assessments may have problems with
                         anonymity.  Often, raters will fear being identified in rating their
                         supervisor despite attempts at confidentiality.

| Application: | A 360-degree assessment can be used as a performance appraisal tool or for developmental purposes. Implicit in the measure, a 360-degree assessment should be completed by the supervisor, self, peers, and subordinates. |
|---|---|
| Source: | The Center for Creative Leadership<br>One Leadership Place<br>Greensboro, NC 27410<br>Phone: (336) 288-7210 |

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# Example Assessment Templates: Observer/Controller Rating Forms





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**FORSCOM LEADERSHIP DEVELOPMENT PROGRAM**
*LEADERSHIP ACTIONS FEEDBACK GUIDE*
(For Use By NTC Observer/Controllers)

### ARMY DEFINITION OF LEADERSHIP
(FM 22-100, DRAFT September 1998)

"Leadership is the process of influencing people – by providing purpose, direction, and motivation – while operating to accomplish the mission and while improving the organization."

**BE     KNOW     DO**

| ARMY LEADERSHIP DOCTRINE |
| --- |

**Leaders of Character and Competence ...**

| VALUES | ATTRIBUTES | SKILLS |
| "BE" | "BE" | "KNOW" |
| --- | --- | --- |
| Loyalty | Mental | Interpersonal |
| Duty | | |
| Respect | | Conceptual |
| Selfless Service | Physical | |
| Honor | | Technical |
| Integrity | | |
| Personal Courage | Emotional | Tactical |

*... Act to Achieve Excellence by Providing Purpose, Direction, and Motivation ....*

| ACTIONS "DO" | | |
| --- | --- | --- |
| INFLUENCING | OPERATING | IMPROVING |
| Communicating | Planning | Developing |
| Decision-Making | Executing | Building |
| Motivating | Assessing | Learning |

---

| LEADERSHIP ACTIONS | FLDP | Side 2 |
| --- | --- | --- |

**I N F L U E N C I N G**

*Communicating*                                    *Discussion [✓]*
* Issued Warning Order, reissued as required............... [ ]
* Restated mission; issued timely, organized OPORD.......... [ ]
* Communicated - clearly & concisely - intent and concept to subordinates (includes Task & Purpose).......... [ ]
* Utilized brief-backs, rehearsals, feedback to ensure thorough understanding of instructions.......... [ ]
* Fostered a spirit of Candor ("Tell it like it is").......... [ ]

*Decision-Making*
* Gathered info/estimates necessary to support decision.......... [ ]
* Synthesized & analyzed info; focused on critical issues.......... [ ]
* Made decision based on sound judgment, logical analysis.......... [ ]
* Announced timely decision clearly & concisely .......... [ ]

*Motivating*
* Maintained climate which encouraged high performance.......... [ ]
* Demonstrated concern for safety & protection of subordinates.......... [ ]
* Provided encouragement, support, direction, & correction.......... [ ]
* Kept unit informed; provided timely feedback.......... [ ]

**O P E R A T I N G**

*Planning*
* Specified additional info requirements.......... [ ]
* Planned, allocated, & managed TIME.......... [ ]
* Evaluated info (considered source, accuracy, relevance).......... [ ]
* Coordinated employment of ALL assets (organic/non-organic).......... [ ]
* Set clear priorities; established controls/triggers.......... [ ]

*Executing*
* Followed plan; adjusted when/where necessary; clearly announced adjustments.......... [ ]
* Provided command/leader presence ('right time, right place').......... [ ]
* Adjusted rapidly to obstacles, difficulties, unforeseen events.......... [ ]
* Guided/taught/coached subordinates during execution.......... [ ]

*Assessing*
* Aware of current status of key items; sought additional required info.. [ ]
* Assessed current status against desired end state.......... [ ]
* Reported status & assessment to HHQ in timely manner.......... [ ]

**I M P R O V I N G**

*Developing*
* Communicated expectations; established high standards.......... [ ]
* Established coaching/teaching/mentoring as an ongoing process.... [ ]
* Knew strengths & weaknesses of subordinates.......... [ ]
* Set the example.......... [ ]

*Building*
* Developed & reinforced sense of teamwork.......... [ ]
* Established conditions for demonstration of initiative by subordinates [ ]

*Learning*
* Sought ways to improve; translated previous experience into action.... [ ]
* Fostered a learning climate; established functional feedback system.. [ ]

# APPENDIX D

### Assessment Measurement Feedback

Please complete the following information regarding your use of assessment measures and mail, fax, or e-mail your response to ARI as detailed on the next page. Your responses and comments will help guide future "tool kit" recommendations which will help enhance the effectiveness of future leadership research for the Army.

From: _____  Date: _____

_____

_____

_____

Research Title: _____

Primary Investigator: _____  Other Investigators: _____

_____

Date Study Initiated/Completed: _____ - _____

Purpose of Study: _____

_____

_____

Please place a check by all the following research topics that your research addressed. If your research addressed linkages between these topic areas, please draw lines between the appropriate topics.

_____ Leadership competencies,   _____ Leadership performance
       skills and temperament              requirements

_____ Leadership selection and assessment   _____ Individual, unit, and
                                                   organizational effectiveness

_____ Leadership training and development   _____ Other: _____

Leadership assessment measure used: _____

Using the framework below, enter your assessment measure into the appropriate cell.

| | | MEASURES OF LEADER EFFECTIVENESS | | | | |
| | | Process Measures | | | Outcome Measures | | |
| Organizational Level: | | Lower | Middle | Upper | Lower | Middle | Upper |
| Level of Analysis: | Individual | | | | | | |
| | Dyad | | | | | | |
| | Team | | | | | | |
| | Unit | | | | | | |

Overall, how useful was this tool kit report to you?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not At All Useful | Not Very Useful | Somewhat Useful | Useful | Very Useful |

## Written Comments

Please comment on the effectiveness as well as lessons learned. As you realize, your written comments provide valuable insight on your experience with the measure. Thank you for providing this quality information.

Thank you for providing feedback. You responses and comments are a valued part of continual improvement in the leadership research community. Please mail, fax, or e-mail your response to ARI as detailed below.

# APPENDIX E

## Leadership Assessment Measures Workshop

### Participant List

| | |
|---|---|
| Aude, Steve[3] | Klein, Katherine[1] |
| Avolio, Bruce[1] | LeBoeuf, Joseph[3] |
| Ayman, Roya[1] | Lewis, Phillip[1] |
| Bliese, Paul[3] | McGee, Michael[3] |
| Dardis, Greg[3] | Michael, Rex[2] |
| Day, David[1] | Pstoka, Joseph[2] |
| Drillings, Michael[2] | Ruskin, Robert[2] |
| Gade, Paul[2] | Rumsey, Michael[2] |
| Hedlund, Jennifer[1] | Shaler, Michael[3] |
| Hunt, Jerry[1] | Simutis, Zita[2] |
| Jacobs, Owen[3] | Tannenbaum, Scott[1] |
| Johnson, Edgar[2] | Tremble, Truman[2] |
| Keizer, Herman, Jr[3] | Wexley, Kenneth[1] |
| Kilcullen, Robert[2] | Yukl, Gary[1] |

[1]Academic Participants
[2]ARI Scientists Participants
[3]Military Participants

# APPENDIX F

Background and Pre-Workshop Assignment Information Mailed to Workshop Participants

## Background Information

     This project involves identifying a set of existing leader effectiveness measures, e.g., the MSQ, or measurement approaches, e.g., a 360° approach, that meet professional standards and then promoting their use in future Army leadership research and operational settings. The measures that we identify with your help , which survive scrutiny, by our panel of experts will be systematically organized and then made available to investigators and operators who wish to use them. These measures would be used whenever possible in ARI sponsored research. This means that a measure identified by the project would be included if it fits the investigator's conceptual framework for effectiveness and/or the operational context of interest, e.g., Army War College. Alternatively, when there is a DESIRE to innovate and create or try out a NEW measure of effectiveness in a study, the investigator would be encouraged to also use as a benchmark the most comparable scale/approach found in our "tool kit." Finally, when there is a NEED to innovate because there is no suitable measure, the investigator would be encouraged to place the new scale into the nomological network of constructs by using several referent measures identified by this project.

     The focus of this phase of our project is to organize the domain of leadership effectiveness and to identify suitable existing measures or measurement approaches or templates. In this regard, you will see that we are asking you to use a framework that we have created for this purpose. Our framework has partitioned the effectiveness, "criterion space," in a particular manner and along certain dimensions. The first dimension emphasizes the fact that leader effectiveness can be manifested and measured in terms of PROCESSES and/or OUTCOMES. Similarly, either measures of process or outcomes may be used to capture effectiveness at different organizational, hierarchical levels. Here we nominate three. Finally we assert that measures may be differentially suitable for and focused on a particular unit of analysis. For purposes of the pre-work and the workshop itself, we are asking you to entertain four such units - individual, dyad, group or team, and business or command. The combination of factors listed above partitions the criterion into 24 feasible cells.

     It is important to note that a specific measure or type of measure may indeed be suitable for more than one location in this "criterion space." In fact, we are open to this possibility. However, we do not want to assume this at the outset. It is also likely that no good measure or approach exists for some of the cells in our framework. But this too has to be established. Finally, we are sensitive to the possibility that still other views can be offered regarding the manifestation of leader effectiveness. There may well be additional factors that must be considered before we can readily identify or nominate a potentially useful measure. The utility or appropriateness of a measure might depend on such things as the presumed purpose" or "use" of the measure (e.g., to measure effectiveness in training or for administrative action), the setting in which the measure is to be taken (e.g., Army garrison context, war games/simulations), and even whether we are interested in assessing the effectiveness of civilian vs. military leaders. This last point withstanding, we ask that you try to work within the framework that we have provided in this packet and leave these latter factors for discussion at the workshop.

## Pre-Workshop Assignment

We would like you to carefully consider the framework below and use it to organize your thinking about the leadership effectiveness measures with which you are familiar. Relying on professional standards, you are then to nominate specific, even proprietary measures for as many of the cells in the framework as you wish. As noted above, it is possible for a given measure to be nominated for more than one location. On the other hand, it is also possible, even desirable to nominate more than one measure for a given cell. Of course, despite your efforts, some cells may remain empty.

It is important to point out that the measures you should consider may derive from basic or applied research. They may have been used in either or both civilian and military contexts. The key point here is that you feel that they have the strong potential to be useful as a way to index or define leader effectiveness.

When a plausible measure or approach has been identified, its name should be entered on the framework schematic in the appropriate place. When possible, please also cite relevant references. Finally, please bring a copy of each measure you nominate to the workshop.

| Measures of Leader Effectiveness | | | | | | |
|---|---|---|---|---|---|---|
| | Process Measures | | | Outcome Measures | | |
| Organizational Level: | Lower | Middle | Upper | Lower | Middle | Upper |
| **Level of Analysis** — Individual | | | | | | |
| Dyad | | | | | | |
| Team | | | | | | |
| Unit | | | | | | |

# APPENDIX G

## Army Leader Assessment Workshop Agenda

### Friday, November 13, 1998

| Start-End Time | Event |
|---|---|
| 8:30-9:00 | Buffet Breakfast |
| | |
| 9:00-10:15: | Welcome and Introductory Comments |
| | |
| 10:15-11:30 | Facilitated discussion: current leader assessment practices in the Army |
| | |
| 11:30-12:15 | Facilitated discussion: criteria for effective assessment tools |
| | |
| 12:15-1:15 | Lunch |
| | |
| 1:15-3:00 | Presentation, nomination, and discussion of specimen measures |
| | |
| 3:00-5:00 | Small group discussion |
| | |
| 5:00-5:30 | Recap and preparation for second day |

### Saturday, November 14, 1998

| Start-End Time | Event |
|---|---|
| 8:30-9:00 | Breakfast Buffet |
| | |
| 9:00-10:30 | Small group discussion: arriving at consensus |
| | |
| 10:30-12:15 | Presentation and facilitated discussion of conclusions from small group discussions |
| | |
| 12:15-1:00 | Wrap up and discussion of future direction |
| | |
| 1:00-2:00 | Lunch |

# APPENDIX H

## Leadership Assessment Measures Workshop

## Small Group Sessions*

<u>Group 1 – Individual</u>

Greg Dardis

Mike Drillings

Phil Lewis

Joe Psotka

Ken Wexley

<u>Group 2 – Dyad</u>

David Day

Paul Gade

Owen Jacobs

Herman Keizer, Jr.

Rex Michael

Gary Yukl

<u>Group 3 - Team</u>

Steve Aude

Paul Bliese

Jennifer Hedlund

Bob Kilcullen

Katherine Klein

<u>Group 4 - Unit</u>

Roya Ayman

Jerry Hunt

Joe LeBoeuf

Mike McGee

Mike Rumsey

Scott Tannenbaum

* Four workshop members were unable to participate in the small group sessions

Please substitute the attached pages for the previously-submitted pages B5-1 through B5-4 of ARI Research Note 99-35 (ADA368448).